

FS50VSJ-2

HIGH-SPEED SWITCHING USE

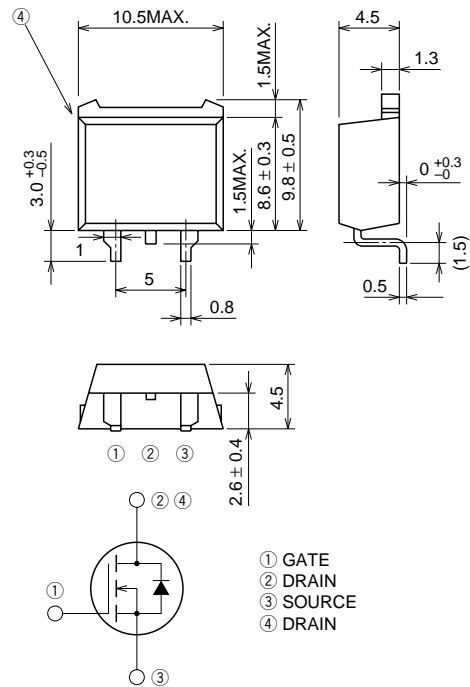
FS50VSJ-2



- 4V DRIVE
- V_{DS} 100V
- $r_{DS} (ON) (MAX)$ $48m\Omega$
- I_D 50A
- Integrated Fast Recovery Diode (TYP.) 90ns

OUTLINE DRAWING

Dimensions in mm



APPLICATION

Motor control, Lamp control, Solenoid control
DC-DC converter, etc.

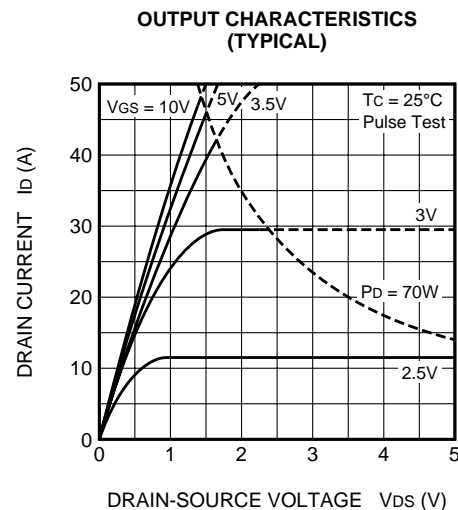
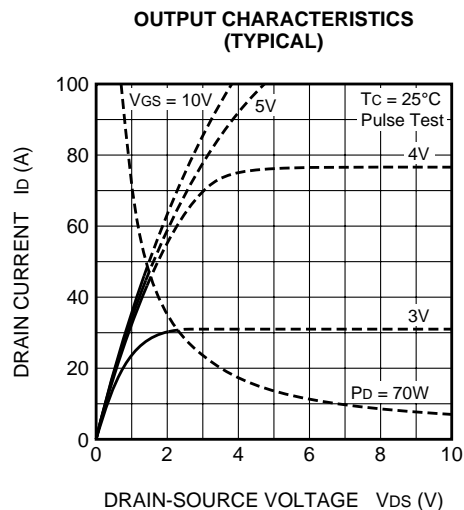
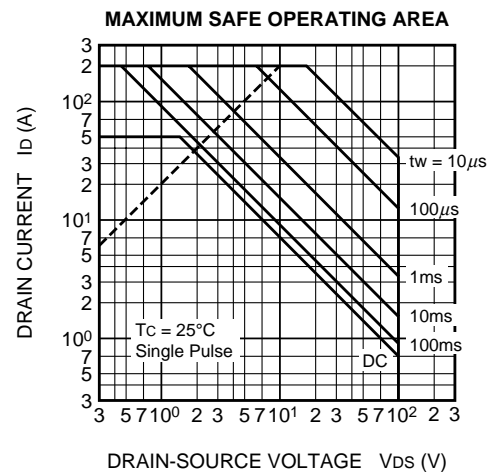
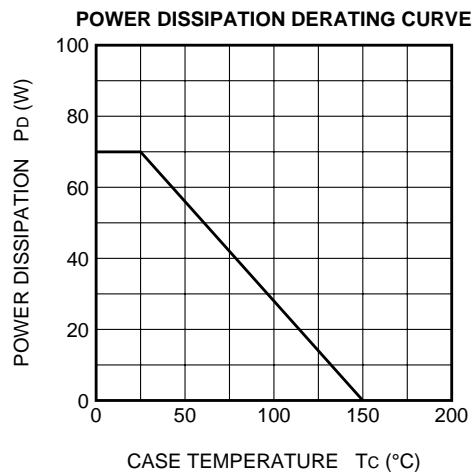
MAXIMUM RATINGS (Tc = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
V_{DS}	Drain-source voltage	$V_{GS} = 0V$	100	V
V_{GSS}	Gate-source voltage	$V_{DS} = 0V$	± 20	V
I_D	Drain current		50	A
I_{DM}	Drain current (Pulsed)		200	A
I_{DA}	Avalanche drain current (Pulsed)	$L = 50\mu H$	50	A
I_S	Source current		50	A
I_{SM}	Source current (Pulsed)		200	A
P_D	Maximum power dissipation		70	W
T_{ch}	Channel temperature		$-55 \sim +150$	°C
T_{stg}	Storage temperature		$-55 \sim +150$	°C
—	Weight	Typical value	1.2	g

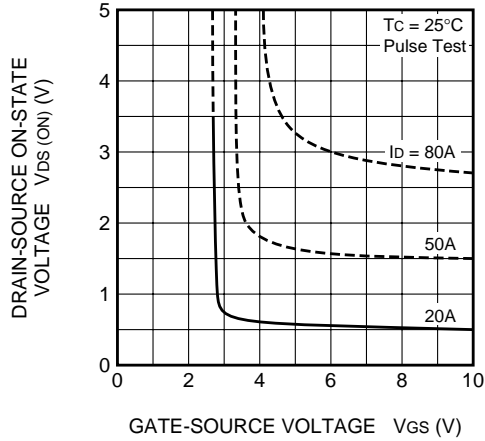
ELECTRICAL CHARACTERISTICS (Tch = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V (BR) DSS	Drain-source breakdown voltage	Id = 1mA, Vgs = 0V	100	—	—	V
IGSS	Gate-source leakage current	VGS = ±20V, VDS = 0V	—	—	±0.1	μA
IDSS	Drain-source leakage current	VDS = 100V, VGS = 0V	—	—	0.1	mA
VGS (th)	Gate-source threshold voltage	Id = 1mA, VDS = 10V	1.0	1.5	2.0	V
rDS (ON)	Drain-source on-state resistance	Id = 25A, VGS = 10V	—	37	48	mΩ
rDS (ON)	Drain-source on-state resistance	Id = 25A, VGS = 4V	—	40	52	mΩ
VDS (ON)	Drain-source on-state voltage	Id = 25A, VGS = 10V	—	0.93	1.20	V
yfs	Forward transfer admittance	Id = 25A, VDS = 10V	—	40	—	S
Ciss	Input capacitance	VDS = 10V, VGS = 0V, f = 1MHz	—	3000	—	pF
Coss	Output capacitance		—	410	—	pF
Crss	Reverse transfer capacitance		—	210	—	pF
td (on)	Turn-on delay time	VDD = 50V, Id = 25A, VGS = 10V, RGEN = RGS = 50Ω	—	22	—	ns
tr	Rise time		—	65	—	ns
td (off)	Turn-off delay time		—	270	—	ns
tf	Fall time		—	160	—	ns
VSD	Source-drain voltage	Is = 25A, VGS = 0V	—	1.0	1.5	V
Rth (ch-c)	Thermal resistance	Channel to case	—	—	1.78	°C/W
trr	Reverse recovery time	Is = 50A, dis/dt = -100A/μs	—	90	—	ns

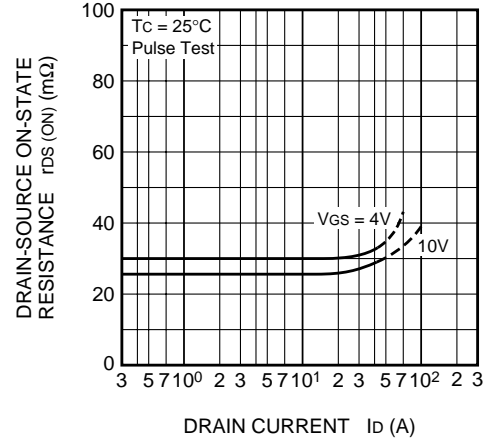
PERFORMANCE CURVES



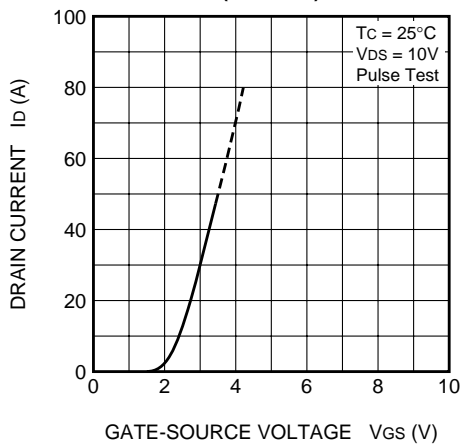
ON-STATE VOLTAGE VS.
GATE-SOURCE VOLTAGE
(TYPICAL)



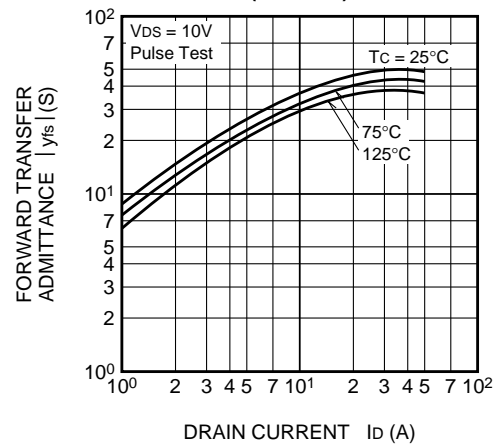
ON-STATE RESISTANCE VS.
DRAIN CURRENT
(TYPICAL)



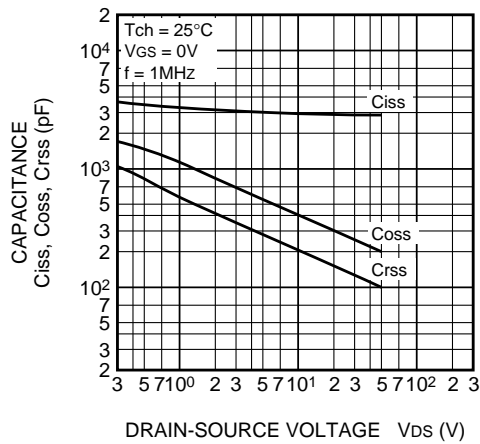
TRANSFER CHARACTERISTICS
(TYPICAL)



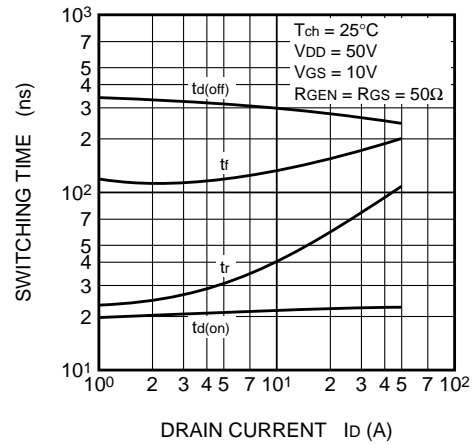
FORWARD TRANSFER ADMITTANCE
VS. DRAIN CURRENT
(TYPICAL)



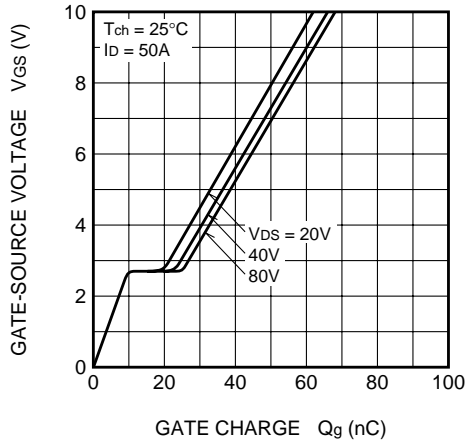
CAPACITANCE VS.
DRAIN-SOURCE VOLTAGE
(TYPICAL)



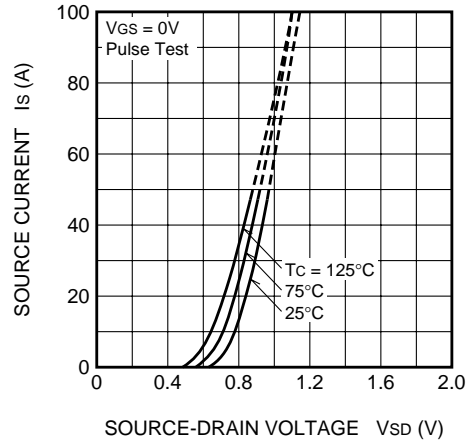
SWITCHING CHARACTERISTICS
(TYPICAL)



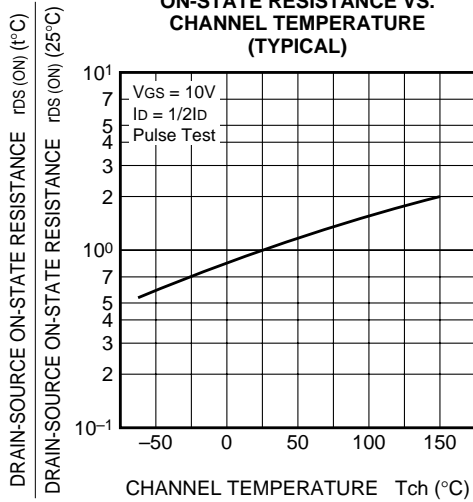
**GATE-SOURCE VOLTAGE
VS. GATE CHARGE
(TYPICAL)**



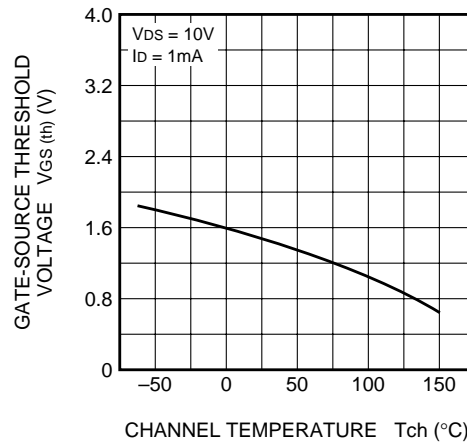
**SOURCE-DRAIN DIODE
FORWARD CHARACTERISTICS
(TYPICAL)**



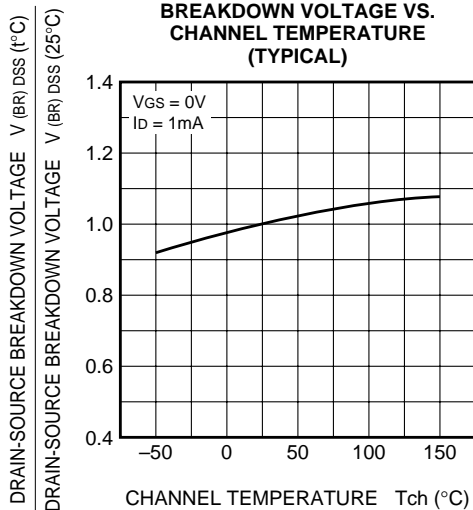
**ON-STATE RESISTANCE VS.
CHANNEL TEMPERATURE
(TYPICAL)**



**THRESHOLD VOLTAGE VS.
CHANNEL TEMPERATURE
(TYPICAL)**



**BREAKDOWN VOLTAGE VS.
CHANNEL TEMPERATURE
(TYPICAL)**



**TRANSIENT THERMAL IMPEDANCE
CHARACTERISTICS**

